

1 WHAT IS CLAIMED IS:

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- 3 1. A method for immunizing an animal against heterologous HIV-1 comprising
- 4 administering to said animal an immunogen comprising at least one modified HIV-1
- 5 envelope protein or fragment thereof, or DNA or virus encoding said at least one
- 6 modified HIV-1 envelope protein or fragment thereof, or a combination thereof, said
- 7 modified envelope protein or fragment thereof having a V2 region deletion, wherein
- 8 said animal exhibits immunity to at least one HIV-1 strain other than that of said
- 9 immunogen.
- 10
- 11 2. The method of claim 1 wherein said immunity comprises a humoral response.
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- 13 3. The method of claim 1 wherein said immunogen comprises a modified HIV-1
- 14 envelope protein from a clade-B HIV-1 strain.
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- 16 4. The method of claim 3 wherein said HIV-strain is SF162.
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- 18 5. The method of claim 4 wherein said modified HIV-1 envelope protein is SEQ ID
- 19 No:2 or SEQ ID No:4.
- 20
- 21 5. The method of claim 4 wherein said DNA encoding said at least one modified HIV-1
- 22 envelope protein is SEQ ID No:1 or SEQ ID No:3.
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- 24 6. The method of claim 2 wherein said humoral response comprises neutralizing
- 25 antibodies.
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- 1 7. The method of claim 2 wherein said humoral response comprises protective
2 antibodies.
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- 4 8. The method of claim 1 wherein said animal is a human.
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- 6 9. A method for eliciting a heterologous immune response to HIV-1 in an animal
7 comprising immunizing said animal with an immunogen comprising at least one
8 modified HIV-1 envelope protein or fragment thereof, or DNA or virus encoding said
9 at least one modified HIV-1 envelope protein or fragment thereof, or a combination
10 thereof, said modified envelope protein or fragment thereof having a V2 region
11 deletion, wherein said animal exhibits a an envelope-specific immune response to at
12 least one HIV-1 strain other than that of said immunogen.
- 13
- 14 10. The method of claim 9 wherein said envelope-specific immune response comprises a
15 humoral response.
- 16
- 17 11. The method of claim 9 wherein said immunogen comprises a modified HIV-1
18 envelope protein from a clade-B HIV-1 strain.
- 19
- 20 12. The method of claim 11 wherein said HIV-strain is SF162.
- 21
- 22 13. The method of claim 12 wherein said modified HIV-1 envelope protein is SEQ ID
23 No:2 or SEQ ID No:4.
- 24
- 25 14. The method of claim 12 wherein said DNA encoding said at least one modified HIV-1
26 envelope protein is SEQ ID No:1 or SEQ ID No:3.

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- 2 15. The method of claim 10 wherein said humoral response comprises neutralizing
- 3 antibodies.
- 4
- 5 16. The method of claim 10 wherein said humoral response comprises protective
- 6 antibodies.
- 7
- 8 17. The method of claim 9 wherein said animal is a human.
- 9
- 10 18. A pharmaceutical composition for immunizing an animal against HIV-1 virus
- 11 comprising an effective heterologous envelope-specific immune response-eliciting
- 12 amount of at least one modified HIV-1 envelope protein or fragment thereof, or DNA
- 13 or virus encoding said at least one modified HIV-1 envelope protein or fragment
- 14 thereof, or a combination thereof, said modified envelope protein or fragment thereof
- 15 having a V2 region deletion; and a pharmaceutically-acceptable carrier or excipient.
- 16
- 17 19. The pharmaceutical composition of claim 18 wherein said modified HIV-1 envelope
- 18 protein is from a clade-B HIV-1 strain.
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- 20 20. The pharmaceutical composition of claim 19 wherein said HIV-1 strain is SF162.
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- 22 21. The pharmaceutical composition of claim 20 wherein said modified HIV-1 envelope
- 23 protein is SEQ ID No:2 or SEQ ID No:4.
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- 25 22. The pharmaceutical composition of claim 20 wherein said DNA encoding said at least
- 26 one modified HIV-1 envelope protein is SEQ ID No:1 or SEQ ID No:3.

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2 23. A method for assessing whether a compound is capable of generating protective
3 antibodies in an animal against at least one heterologous strain of HIV-1, said animal
4 capable of developing protective antibodies against wild-type HIV-1, said method
5 comprising the steps of immunizing said animal with said compound, depleting said
6 animal of its CD8+ T-lymphocytes, and assessing the presence of protective
7 antibodies in the said animal to at least one heterologous strain of HIV-1.

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9 24. The method of claim 23 wherein said depleting is carried out by administering to said
10 animal anti-CD8 monoclonal antibodies.

11
12 25. The method of claim 23 wherein said compound is an HIV-derived polypeptide or
13 fragment thereof or a DNA or virus encoding said peptide or fragment thereof.

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15 26. The method of claim 23 wherein said immunizing is carried out with a DNA vaccine,
16 a protein, or a combination thereof.

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18 27. The method of claim 23 wherein said neutralizing antibodies are protective
19 antibodies.

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